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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,998	12/31/2001	Koichi Asai	111609	7004

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EXAMINER

DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,998

Applicant(s)

ASAI ET AL.

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-14,16 and 18-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,6-12,14 and 18-30 is/are allowed.
- 6) ☒ Claim(s) 5 and 16 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Comments***

1. Neither Te Velde (U.S. 3,847,758), Matlow et al (U.S. 3,040,416), Paradise, (U.S. 2,904,613), nor Ralph (U.S. 3,025,335) teaches or suggests the method for producing a photovoltaic panel now presented in independent claims 1, 6, 7, 9, 12, and 29. Note that claims 1 and 12 further define the producing step and have an embedding step with a temporarily-holding member. Claim 6 further defines the producing step and the forming step, and the forming step uses a container to which the first-light-transmitting material is supplied. Claims 7 and 9 use a plurality of transparent spherical members. In claim 29, the recited first light-transmitting member fills a space between the first plane and a second plane which is parallel and tangent to the photovoltaic elements; and the recited second light-transmitting material defines the second plane. Matlow et al is the closest prior art to claim 29 since it has two transparent layers (42,43). However, Matlow et al's layer (43) does not define a second plane which is tangent to the photovoltaic elements (18). Such a tangency can be seen, for example, in instant Figures 27 and 28, where the bottom of layer (202) is tangent to the photovoltaic element (10).

Claim Objections

2. Claim 13 is objected to because of the following informalities: In claim 13, at line 3, the term "light- transmitting" should be changed to "light-transmitting". Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 is now indefinite because it depends from claim 4, which has been canceled. It is suggested that claim 5 be amended so as to dependent from claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paradise, U.S. Patent 2,904,613, in view of Ralph, U.S. Patent 3,025,335.

Paradise teaches a method of making a solar energy converter wherein silicon semiconductor particles (13) are embedded in a binder (12) of polyethylene by painting or spraying the uncured binder onto reinforcing plate (10), then embedding the particles into the binder, and then curing (hardening) the binder (see col. 3, lines 5-31; and Figures 1-5). Since polyethylene is thermoplastic, the hardening of the polyethylene is done by cooling. The performance of such a cooling step in the presence of light, i.e., in a lit room where the device is exposed to light (as opposed to a completely dark room

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having no light), would clearly have been within the skill of an artisan. Paradise teaches the limitations of the instant claims other than the difference which is discussed below.

Paradise does not specifically teach that its polyethylene is transparent. Ralph is relied upon for showing that polyethylene that is used in solar energy converters can be transparent (see col. 1, lines 66-72). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used transparent polyethylene for Paradise's polyethylene binder (12) because polyethylene that is used in solar energy converters can be transparent, as shown by Ralph.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matlow et al, U.S. Patent 3,040,416, alone or in the alternative, further in view of Fridrich, U.S. Patent 3,247,477.

Matlow et al prepares a solar cell by producing a transparent plastic layer (43) which reads on the instant light-transmitting, photovoltaic-element holding member and which holds a plurality of solar cells (18) each having a p-type layer and an n-type layer (see Figure 2; and col. 1, line 54 through col. 2, line 34). As clearly seen in Figure 2, both electrodes are on one of opposite sides of the transparent plastic layer (43). The solar cells (18) are embedded in the transparent plastic layer (43) by calendaring liquid plastic layer (43) onto plastic sheet (42), then partially embedding the solar cells in the liquid plastic layer (43) and then hardening (i.e., curing) the plastic layer (43) (see the paragraph bridging cols. 1 and 2). Matlow teaches the limitations of the instant claims other than the difference which is discussed below.

Matlow et al does not specifically recite that said curing comprises exposing the liquid plastic layer (32) to light. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed Matlow et al's curing in a lit room, i.e., a room having light, so that the curing is not performed in the dark.

Alternatively, Fridrich teaches a curable insulating material (3) for photoconductive devices (see col. 1, lines 9-17; col. 3, line 45 through col. 4, line 9; and Figure 3). The material (3) is used to bind semiconductor particles (4) (see Figure 1-4). The material (3) can be thermosetting, thermoplastic, or a material that is subject to radiation (i.e., light) in order for curing i.e., a photocuring material. With thermosetting and thermoplastic materials, there is normally exposure to light since the heating or cooling for curing does not take place in the dark. Indeed, heating a thermosetting material can take place by using the heat from exposure to sunlight. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a thermosetting material, thermoplastic material, or photocuring material for Matlow et al's liquid plastic layer (32) because these are materials that are used in the art, as shown by Fridrich.

Response to Arguments

8. Applicant's arguments filed July 10, 2003 have been fully considered but they are not persuasive.

Applicant argues that Matlow et al does not teach or suggest hardening the plastic layer (43) in a particular manner in which the plastic layer (43) is exposed to

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light. However, this argument is not deemed to be persuasive because, as noted above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed Matlow et al's curing in a lit room, i.e., a room having light, so that the curing is not performed in the dark. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a thermosetting material, thermoplastic material, or photocuring material for Matlow et al's liquid plastic layer (32) because these are materials that are used in the art, as shown by Fridrich. With thermosetting and thermoplastic materials, there is normally exposure to light since the heating or cooling for curing does not take place in the dark. Indeed, heating a thermosetting material can take place by using the heat from exposure to sunlight.

Applicant argues that Paradise does not teach or suggest hardening its binder (12) by exposing the binder (12) to light. However, this argument is not deemed to be persuasive because, as noted above, Paradise uses polyethylene, which is thermoplastic, i.e. the hardening of the polyethylene is done by cooling. The performance of such a cooling step in the presence of light, i.e., in a lit room where the device is exposed to light (as opposed to a completely dark room having no light), would clearly have been within the skill of an artisan. Thus, the combination of Paradise in view of Ralph renders obvious instant claim 16.

Allowable Subject Matter

9. Claims 1, 6-12, 14, and 18-30 are allowed.

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10. Claim 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. Claim 13 would be allowable if rewritten to overcome the objection for formalities set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 4,136,436 is hereby made of record.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-0840. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized, cursive script.

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
July 25, 2003